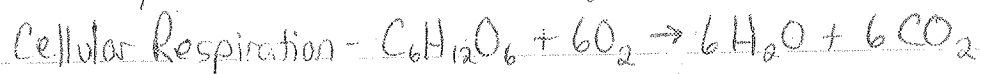


1. a. Variety 1 = higher SA/V loses material/heat/water faster
b. Heat/Dry conditions cause low Ψ outside, so water flows from high Ψ to low Ψ outside.
c. Small... see (a) explanation
d. Plant - ① Low soil moisture sensed ② Triggers closing of stomata / \downarrow Photosynthesis ③ Water loss slowed by actions of "②".
Animal - ① N.S. senses low water in cells/blood.
② Stimulates hormones to conserve H_2O in kidneys (ADH)
③ Water re-absorbed/conserved by kidneys.
e. N.S. favors structures suited to environment. Heat usually triggers H_2O loss, so an enzyme activated by heat would be most effective. Enzymes are proteins formed by various levels of structure, each level held together by specific bonds sensitive to pH + temperatures; deviations from these lead to bonds breaking + the enzyme denaturing.



- b. ① Products of each process are metabolized + not simply the same reactants for the other process.
② Separate Locations (Chloroplast vs. Mitochondria).
③ Different enzymes/modes of ATP production.

c. Photosynthesis probably first since doesn't require oxygen ... was no oxygen for C.R. on the early Earth.

3. a. Plant $\xrightarrow{10\%}$ Mouse $\xrightarrow{10\%}$ Bobcat 10% energy moves.

b. Food web required decomposer to show recycling of matter.

c. $q^2 = .36$ looking for $2pq$ (heterozygote is most successful since not eaten!). $\sqrt{.36} = .6 = q \therefore p = .4$
 $2pq = \boxed{.48}$

d. No mutations, No migrations (Gene Flow), Random Mating
No Natural Selection, Large population to offset Genetic Drift.

4. a. Innate probably unaffected - Inflammatory Response, Macrophages, Interferon.

Acquired non-functional because Helper T cells required to activate B-Cells (Humoral Response) + Cytotoxic T-cells. No memory cells will be produced so all Acquired Immunity will shut down.

b. Fewer bobcats will lead to increased mice, leading to fewer plants. Plants may decrease too much leading to crash in mouse population.